**GridWorld Case Study (Part 2)**

Do You Know?

1. Why is the role of the instance variable *sideLength*?

*sideLength* provides the length that the BoxBug will move before turning 90 degrees.

1. What is the role of the instance variable *steps*?

*Steps* provides a counter for how many steps the bug has taken. It allows for the act() method to know if it should turn the bug 90 degrees or not.

1. Why is *turn* method called twice when *steps* becomes equal to *sideLength*?

*Turn* is called twice because the *turn* method only turns an actor by 45 degrees. So by calling it twice, the bug will turn a total of 90 degrees.

1. Why can the *move* method be called in the *BoxBug* class when there is no *move* method in the *BoxBug* code?

The *move* method can be called in the *BoxBug* code because it is a sub class of the *Bug* class, therefore it inherits all of the methods and public variables of that class… Including the *move* method.

1. After a *BoxBug* is constructed, will the size of its square pattern always be the same? Why or why not?

Yes and no. Under ideal conditions, the size of the box would always be the same. And by “ideal,” I mean no world borders, no rocks, no obstructions of the bugs path that could ultimately change its path and therefore it’s box’s size.

1. Can the path of a *BoxBug* travels ever change? Why or why not?

Yes, the path can change. If there is something in the way of the bug, it will turn and move around it, therefore changing its path.

1. When will the value of *steps* be zero?

*Steps* will be zero right after the bug turns 90 degrees.